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INVESTIGATION ARTICLE

# Urban-Rural Differences in Moral Foundations: A Meta Analytic Approach

## Diferencias urbano-rurales en fundamentos morales: un enfoque meta-analítico

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**How to cite:** Castilla-Estévez, D. (2025). Urban-Rural Differences in Moral Foundations: A Meta Analytic Approach. *Rev. CES Psico, 18*(1), 106-119. https://dx.doi.org/10.21615/cesp.7557

**Abstract**

The social division between the rural environment and the urban environment not only implies differences in living conditions but is also expressed in the different values and attitudes that predominate in one or another context. In this article, the rural-urban divide is addressed from the framework of Moral foundations Theory (MFT). Specifically, a meta-analytical study analyzes the differences in moral foundations between rural and urban areas. A selection among 6093 published and unpublished articles between 2007 and 2020 resulted in a sample of 13 studies (k = 36; N = 200,099). Contrary to expectations based on the MFT itself, results showed significant but negligible differences in the levels of Fairness/cheating ($d_+$ = -.074). Since significant heterogeneity was found for the five foundations, analyses for possible moderators were carried out, and the scale utilized to measure moral foundations emerged as the most important moderator. As a result, higher moral levels in rural areas for Authority/subversion ($d_+$ = -.127) and Purity/degradation ($d_+$ = -.177) emerged when only studies which utilized any version of the Moral Foundations Questionnaire (MFQ), were considered. Limitations regarding the use of non-MFQ-based scales or items, and some possible challenges regarding the generalizability of the MFT, are discussed.

**Keywords:** moral foundations; moral development; rural environments; urban environments; ideology; meta-analysis.

**Resumen**

La división social entre el entorno rural y urbano no sólo implica diferencias en las condiciones de vida, sino que también se expresa en los diferentes valores y actitudes que predominan en uno u otro contexto. En este artículo se aborda la brecha rural-urbana desde el marco de la Teoría de los Fundamentos Morales (MFT). En concreto, se ha realizado un estudio meta-analítico para analizar las diferencias en fundamentos morales entre zonas rurales y urbanas. Una selección entre 6.093 artículos publicados y no publicados entre el 2017 y el 2020 dio como resultado una muestra de 13 estudios (k = 36; N = 200.099). Los resultados mostraron diferencias significativas pero insignificantes en los niveles de Justicia/engaño ($d_+$ = -.074). El moderador más importante fue la escala utilizada para medir los fundamentos morales. De esta forma, el uso de escalas basadas en cualquier versión del Cuestionario de los Fundamentos Morales (MFQ) se asoció con niveles significativamente mayores de puntuaciones morales en las zonas rurales para Autoridad/subversión ($d_+$ = -.127) y para Pureza/degradación ($d_+$ = -.177). Se analizan las limitaciones derivadas del uso de escalas o ítems no basados en la MFQ, así como posibles limitaciones de la MFT en términos de generalizabilidad a muestras no occidentales.

**Palabras clave:** fundamentos morales; desarrollo moral; entornos rurales; entornos urbanos; ideología; metaanálisis.

## Introduction

Historically, there has been an alignment between personal value differences along the liberal-conservative spectrum and the rural-urban divide in the USA (Monnat & Brown, 2017), and also outside the USA, as current political events such as Brexit show (Hobolt, 2018). However, the rural-urban social division, which appears to be clearer than other sociodemographic divisions (Koseki & Lévy, 2018), has some characteristics of its own,

**Date of correspondence:**
Received: November 15, 2023.
Accepted: October 1, 2024.

**DOI:** 10.21615/cesp.7557
**ISSNe:** 2011-3080
https://revistas.ces.edu.co/index.php/psicologia

Vol. 18 No. 1 / Enero - abril 2025

which makes rural-urban differences more than a mere division between urban liberals and rural conservatives (Dillon & Savage, 2006). Much evidence shows that certain key differences between rural areas and metropolitan areas in resources and values are consistent. Urban environments are more associated with progressive values (defined as tolerant attitudes to immigration, gender rights, and family life) and more access to public services and job opportunities, compared to more car-dependent and isolated conservative rural areas (Gimpel et al., 2020; Koseki & Lévy, 2018; Luca et al., 2023).

These differences have been increasing in Western countries in recent years (Koseki & Lévy, 2018; Luca et al., 2023), especially in the USA (Brown & Mettler, 2023), leading to increasing social tensions and conflicts between both environments, like the demonstrations of the yellow vests in France (Douenne, 2020), the Catalan independence movement in Spain (Oller et al., 2019; Vaczi, 2016) or the rise of right-wing populism in Europe (Mamonova & Franquesa, 2019), among others.

Although the relationship between morality and the liberal-conservative dimension has been extensively researched, especially from the Moral Foundations Theory (MFT) perspective (Graham et al., 2013; Haidt, 2012; and Kivikangas et al., 2021, for a meta-analysis), the possible relationship between morality and the rural-urban divide has not been reviewed from the MFT perspective until now.

This article aims to investigate whether the cultural division between the rural and the urban is rooted in a difference in moral matrixes and to what extent this difference between urban moral matrix and rural moral matrix differs from the liberal-conservative division proposed by the Moral Foundations Theory (MFT) (Graham et al., 2009: Haidt & Joseph, 2004).

## Moral Foundations Theory and the urban-rural divide

In their article titled “Tracing the threads”, Koleva et al. (2012) begin by presenting two people living in the United States, Libby and Connie. Libby is pro-abortion and in favor of restricting access to firearms, while Connie is anti-abortion and against restricting access to firearms. After this presentation, the authors ask the reader to guess which person would be against capital punishment. The answer appears to be quite simple: Connie will be more likely to be pro-capital punishment because of her conservative views on abortion and access to firearms rights, while Libby will probably be against capital punishment because she seems to hold progressive values. Although Koleva et al. (2012) don’t tell us where specifically Libby and Connie live within the USA, the reader could probably also answer the following question: which of them lives in a little village and which one of them lives in a big city? Probably most respondents would naturally conclude that Connie lives in a small village while Libby lives in a big city. If it is reasonable to guess Connie's and Libby's living environments based on their moral positions, then it would be beneficial to address the urban-rural social divide, and its potential negative social consequences, from a theoretical framework that studies the relationship between morality and social environment.

The MFT (Graham et al., 2013) takes a socio-intuitive perspective to explain human morality. According to the MFT, morality is an adaptative tool for humans that has been developing over time within a particular cultural or geographical context. Humans “come equipped with intuitive ethics, an innate readiness to feel flashes of failure or disapproval toward certain patterns of events involving other human beings” (Haidt & Joseph, 2004, p. 56). This intuitive ethic works like any other evolutionary mechanism that is already found at birth in all human beings, but that must be developed in a specific context, such as language, lactose tolerance, physical strength or the ability to distinguish colors or flavors. What differentiates moral intuitions from other evolutionary mechanisms is their marked character of social adaptability, so there will be shared moral intuitions that have developed more in some cultures than in others.

The moral matrix is based on a set of *moral foundations* that encompass different kinds of moral intuitions: Harm/care, Fairness/cheating, Loyalty/betrayal, Authority/subversion, Purity/degradation. Whereas the first two moral foundations (Harm/care and Fairness/cheating), known collectively as Individualizing Foundations,

refer to moral values related to inter-individual behavior, the last three moral foundations (Loyalty/betrayal, Authority/subversion, Purity/degradation), known collectively as Binding Foundations, refer to moral values related to intra-group behavior. Therefore, Binding Foundations-related moral values depend on the social, historical, geographical and cultural context of the group, whereas Individualizing Foundations-related moral values do not depend on the group context or group characteristics, and they would be then less influenced by culture than Binding Foundations (Haidt, 2012).

Drawing from this universal moral configuration, it is possible to make certain hypotheses about what specific moral configurations (or moral matrices) may exist not only between different cultures in general, but also between different human groups in particular. These configurations will show which virtues or behaviors have been established in these human groups as more socially desirable and less desirable. According to the MFT, although moral foundations have emerged in all cultures, the specific development of each of them has depended on the cultural context. This means that different human groups will have developed different moral configurations highlighting different socially desirable or undesirable behaviors. As a result, when a society is culturally diverse, some potential risks of intergroup conflict with (at least, in part) incommensurable moral principles may be expected.

For example, the MFT explains the liberal-conservative division from a moral intuitions perspective. According to the MFT, social confrontations derived from politics corresponded to a moral gap between liberals and conservatives (Graham et al., 2009). While liberals' morality is based solely on individualizing foundations, conservatives regard equally all foundations, both individualizing and binding. Therefore, liberals disregard conservatives' moral positions based on Binding Foundations, since they do not see those foundations as moral at all but see them as social limitations instead. As Jost (2012, p. 526) explains: "[to prize] universal over parochial considerations (the justice principle of impartiality), is in fact a tremendous cultural achievement—a shared victory over the limitations of our more primitive ancestral legacy". Evidence confirming the moral gap between liberals and conservatives have been found not only in the USA (Graham et al., 2009), but also in other countries, such as Finland (Kivikangas et al., 2017), Sweden (Nilsson & Erlandsson, 2015), Turkey (Yilmaz et al., 2016) or New Zealand (Davies et al., 2014).

However, if differences in moral foundations are a product of a psychological preparedness, which in turn depends on the cultural and geographical context, we should also see moral foundation differences between groups other than political. Indeed, a moral division has been measured between men and women (Atari et al., 2020) and also between people from Western countries, and people from Eastern countries (Graham et al., 2011).

If the urban-rural conflict also has a moral gap-related root, we would expect different moral matrices between people living in a rural environment and people living in a big city. What differences would we encounter?

## A Moral Foundations hypothesis to explain the urban-rural divide

Some scholars have defended urban segregation as a product of the individual choice to overcome the rigidities of the traditional community (Maloutas, 2004). Concerns for collectivistic norms and values, for example, more restrictive attitudes toward sexuality, same-sex relations and abortion (Dillon & Savage, 2006), have been predominant in rural environments compared to urban (Watkins & Regmi, 1996; Georgas, 1989). This opposition to same-sex relations may cause a social burden to sexual minorities, with sexual minority adolescent boys being more likely than their urban peers to report suicidal behaviors (Poon & Saewyc, 2009).

However, the urban/rural divide in morality is not only driven by self-segregation. Features of the social environment are likely to have a strong impact. For example, nations that have encountered more ecological and historical threats, namely Eastern countries, show stricter social (group) norms than Western countries (Gelfand et al, 2011). Likewise, rural environments would be expected to show stricter social norms than urban environments. Indeed, health conditions in general are worse in rural areas, (Aggarwal et al., 2021; Goeres et al.,

2016; Khoong et al., 2014), rural people suffer more from natural disasters, both psychologically and economically (Rahman et al., 2022; Seong et al., 2022), and are less digitally developed (de Clercq et al., 2023) and less economically developed (Shrider et al., 2020; Young, 2013) than their urban counterparts.

Another main social environmental feature that have to be considered is that rural areas have less population and are more isolated than urban areas. Smaller populations imply less choice of social networks and more face-to-face interactions with co-residents than urban environments with larger populations. As a result, individuals have greater knowledge about each other, and it is easier to improve social coordination, compared to urban populations (Moncrieff & Lienard, 2018). Likewise, and contrary to urban areas, the interaction between most members of rural areas is likely to establish over time a more community-oriented identity based on shared historiography, narratives and culture. These processes are important for the community to assume a common identity, as is the case with Leave voters in the Brexit referendum, who came mainly from outside metropolitan areas (Neal et al., 2021), or Catalan separatist, who also are the majority in Catalonian rural areas, even among liberals and socialists (Oller et al., 2019; Vaczi, 2016).

If, compared to urban environments, a more community-oriented identity, stability in social connections, and improved social coordination are expected, then a moral structure in which those more community-rooted attitudes and everyday practices would also be expected in rural communities, compared to urban communities. Moreover, if health conditions are harsher in rural environments compared to urban conditions, higher concerns for pathogens and illnesses, along with a more restrictive attitudes toward sexuality, would also be expected in rural areas compared to urban areas.

Thus, drawing from the MFT, the present study is aimed at testing these assumptions trough a meta-analysis of studies that measured moral judgment both in rural and urban populations. Differences between rural and urban environments would be expected in three of the five moral foundations: Loyalty/betrayal and Authority/subversion, regarding the greater concern for social roles within more stable social networks and a community-oriented shared identity, and Purity/degradation, regarding everything related to pathogen and deviant-sexual-based behavior. In other words, significantly higher Binding Foundations' levels are expected for rural populations compared to urban populations.

# Method

Moral differences between rural and urban populations were studied through a meta-analytical approach. In order to compile articles that include measures of both moral foundations and urbanicity, a search in Google Scholar and psychINFO using very broad terms, "moral foundations" AND "Haidt" (the principal investigator of the Moral Foundations' research group), from 2007 to 2020. From a first list of 6083 entries, studies that included both a measure of urbanicity and measures of moral intuitions were selected, resulting in a sample of 13 studies. All selected moral measures were taken under normal, non-manipulated or non-experimental treatments; and all samples were comprised by non-psychopathically diagnosed individuals. Since only three of the selected studies included already descriptive information about the relationship between urbanicity and moral foundations, a kind data request mail and a reminder were sent to the remaining 10 articles' authors. Two of them responded positively, therefore a total of six articles were first gathered.

Another search was made among other databases that had been gathered previously from other MFT projects. In order for a database to be selected, it had to include a direct or indirect measure of urbanization, and moral measures had to be taken under normal, non-manipulated or non-experimental treatments. Moreover, selected samples had to be comprised of non-psychopathically diagnosed individuals. A total of seven databases were collected: four of them with a direct measure of urbanization (Dickinson et al., 2016; Forscher & Kteily, 2020; Measuring Morality, 2013; Quintelier et al., 2013) and three of them (Graham et al., 2009; Graham et al., 2011; Kim et al., 2012) with the USA Zone Improvement Plan (ZIP) code information for each participant. Each ZIP code district was associated with a measure of population density, using the information available at Standard Co (2020). Population density correlate with urbanization, and can also serve as a part of its definition (Christiaensen

& Kanbur, 2017; Hooghe & Botterman, 2012). Overall, our meta-analysis involved 13 studies (k = 36; N = 200,099). The flowchart of this process is shown in Figure 1.

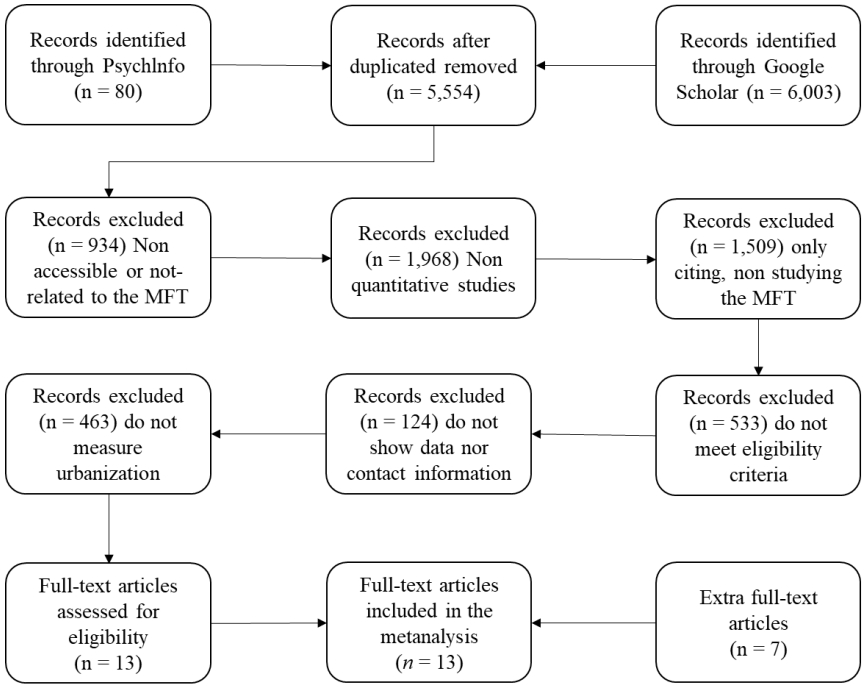


**Figure 1.** Flowchart of the studies' search.

As rural and urban contexts can also vary depending on the country or culture, possible moderating effects on rural-urban differences regarding the following variables were investigated: 1) One of the main possible factors involved is the cultural context. As Henrich et al., (2010) showed, geographical characteristics can significantly influence certain psychological variables, being Western, Educated, Industrialized, Rich and Democratic (WEIRD) countries, especially the USA, the least generalizable psychologically. According to the MFT, WEIRD countries may be generally more apt to endorse moral codes emphasizing individual rights, and non-WEIRD cultures tend to more strongly moralize in a group-based fashion, especially regarding communal obligations and spiritual purity (Graham et al., 2016). Since data from non-western countries was scarce, samples were classified into two groups regarding this WEIRDness: USA and non-USA samples. 2) Country density population ($pop/km^2$) (World Bank, 2021). Population density play an important role in the differentiation between the urban-rural context (Christiaensen & Kanbur, 2017). At the country level, it could even imply a different meaning for how a "city" is defined, so that if population density for the country is low, smaller urban centers could be defined as cities, and vice versa (Jefferson, 1989). 3) Other country-based variables that could impact urban-rural differences in morality include income inequality (as measured by the Gini index) (World Bank, 2020), population density and wealth itself (country's Gross Domestic Product per capita, or GDP) (World Bank, 2021, 2022).

Another two variables were added as possible moderators. Gender, coded as the percentage of women in the sample, was included, since gender differences in moral foundations are significant, especially with regard to Harm/Care (Atari et al., 2020). The mean age of each sample was also included as a possible moderator, since differences between urban and rural populations with respect to certain health-related issues or rural poverty, have been evolving over time (Christiaensen & Kanbur, 2017; Singh & Siahpush, 2014; Cali & Menon, 2013; Kapusta et al., 2008).

Lastly, possible measurement biases in the results had to be controlled. Therefore, one more possible mediator was added: a dichotomic *MFQ* variable assessed whether or not any version of the Moral Foundations Questionnaire (Graham et al., 2009; Graham et al., 2011) was used in order to sort out possible instrument bias.

Thus, samples that utilized either the 30-item MFQ (Graham et al., 2011), the 40-item MFQ (Graham et al., 2009), or any other abbreviated version of the MFQ, were coded as "1". Conversely, samples which utilized any other validated scale for the moral foundations (like the MFSS scale, Graham & Haidt, 2012), any other ah-hoc instrument, were coded as "0". For example, several samples in the present metanalysis were extracted from Welsch (2019), who utilized five ad-hoc items to measure the five moral foundations, one item for each foundation. The five items were part of a large European survey non-related to the MFT. Descriptive information of the samples can be found in https://osf.io/7ub9d/ .

## Codification of studies

Since the urbanization information was presented in a diverse array of different codifications among the samples, several approximations were made. First, intermediate urbanization categories were discarded, where present. Second, correlations between urbanization and moral foundations were transformed into a Cohen's-d differences (using formula shown in Botella & Sánchez-Meca, 2015). Third, in datasets including each respondent's zip code, the first tertile of zip code districts, ordered by population density (the most urbanized regions), and the third tertile (the least urbanized regions) were selected for the metanalysis, while the second tertile was discarded.

## Statistical Analyses for the Meta-analyses

A by-default random effect model was assumed (Borenstein et al., 2010) for the analyses, as differences in moral foundations between rural and urban contexts were supposed to be a continuous and normally distributed variable. Every meta-analysis followed the same process: 1) the pooled Cohen's-d difference or effect size (ES) for each foundation was calculated; 2) Q statistic, which serves to test if ES heterogeneity is significant, and $I^2$ , which serves as a measure of ES heterogeneity size (Huedo-Medina et al., 2006) were obtained for every foundation; 3) possible publication bias was investigated through Kendall's Tau adjusted rank correlation test (Begg & Mazumdar, 1994) and Orwin's fail safe number tests (Orwin, 1983) for all pooled ES. 4) moderator analyses for possible categorical moderators and also simple meta-regression analyses for continuous moderators for every foundation were conducted. Outliers were searched and controlled by box-plot for univariate data analyses (Mosteller & Hoaglin, 1991). 5) $R^2$, the percentage of specific or inter-study variance explained by the model (Borenstein et al, 2009) was calculated for every moderator analysis. Analyses were performed using Wilson's meta-analysis macros for SPSS (Wilson, 2005) and Metaphor package for R (Viechtbauer, 2010).

# Results

Separate meta-analytic analyses were conducted for each moral foundation pooled difference between people in rural contexts and people in urban contexts. General results for each moral foundation, as well as Orwin's fail safe number and Kendall's tau tests, are displayed on Table 1.

Contrary to what was expected, Table 1 shows no significant Harm/care, Loyalty/betrayal, Authority/subversion or Purity/degradation differences between rural and urban contexts. Only Fairness/cheating shows a negative significant pooled ES ($d_+$= -.0738). This difference is very weak, and the associated Orwin's fail safe number is very small (*O.* = 11). This low number means that the significant difference obtained for Fairness/cheating could just depend on the samples utilized, and is expected to become non-significant with the addition of new data. Kendall's Tau rank tests indicates no publication bias in the metanalyses.

**Table 1.** General results.

| *MF* | *k* | $d_+$ | *Z* | $\tau^2$ | *Q* | $I^2$ | *O.* | *Tau* |
|---|---|---|---|---|---|---|---|---|
| HC | 35 | .010 | .442 | .009003 | 113.043*** | 69.9 | 0 | .0017 |
| FC | 35 | -.074* | -2.449 | .023322 | 238.405*** | 85.7 | 11 | .1227 |
| LB | 35 | -.049 | -1.774 | .018955 | 200.306*** | 83.0 | 7 | -.0891 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AS | 35 | -.007 | -.227 | .024349 | 246.857*** | 86.0 | 0 | -.1798 |
| PD | 36 | .043 | 1.065 | .049533 | 479.696*** | 92.9 | 0 | -.2127 |

**Note:** *MF = Moral Foundation; HC = Harm/care; FC = Fairness/cheating; LB = Loyalty/betrayal; AS = Authority/subversion; PD = Purity/degradation; k* = number of independent samples; $d_+$= pooled ES; $\tau^2$ = between-study variance; *Q* = Cochran's heterogeneity *Q* statistic with *k*-1 degrees of freedom; $I^2$ = heterogeneity percentage index; O = Orwin's fail safe number. * *p* < .05, ** *p* < .01, *** *p* < .001.

**Table 2.** Selected results for analysis of moderators.

| *Mod* | $Q_b$ | $R^2$ | *v.* | $d_+$ | *Z* | *k* | $Q_{wg}$ | $I^2$ |
|---|---|---|---|---|---|---|---|---|
| ***Fairness/cheating*** | | | | | | | | |
| MFQ | 3.939* | 17.3 | 0 | -.105** | -3.286 | 24 | 139.509*** | 85.5 |
| | | | 1 | .028 | .475 | 11 | 9.958 | .0 |
| ***Authority/subversion*** | | | | | | | | |
| MFQ | 5.263* | 14.7 | 0 | .030 | .916 | 24 | 147.110*** | 84.4 |
| | | | 1 | -.127* | -2.114 | 11 | 12.436 | 19.6 |
| USA | 4.429* | 11.9 | 0 | .017 | .529 | 30 | 158.238*** | 81.7 |
| | | | 1 | -.173* | -2.049 | 5 | 2.348 | .0 |
| ***Purity/degradation*** | | | | | | | | |
| MFQ | 21.504*** | 57.2 | 0 | .127*** | 3.857 | 24 | 162.392*** | 85.6 |
| | | | 1 | -.177** | -3.118 | 12 | 5.825 | .0 |

**Note:** Mod = Moderating variable; $Q_b$ = Heterogeneity test for Mod.; $R^2$ = inter-study variance percentage explained by the variable; v. = variable value; $d_+$= pooled ES; $Q_{wg}$ = within-group heterogeneity Q statistic with k-1 degrees of freedom; $I^2$ = heterogeneity percentage index; * p < .05, ** p < .01, *** p < .001.

Heterogeneity tests found significant results for every moral foundation, and $I^2$ results are high for Fairness/cheating, Loyalty/betrayal, Authority/subversion and Purity/degradation. This means that moral differences between rural and urban contexts are not uniform across the samples. Therefore, moderating analysis were made for every foundation all the candidates that had been already selected: both categorical (USA and MFQ) and scalar (Gender, Age, Gini index, GDP per capita and population density). Further meta-regression analysis was made only for significant moderators in order to discard those whose moderating effect was better explained by other variables.

Results for the heterogeneity analysis are presented on Table 2. Due to the large number of analyses made and for the sake of simplicity, only results for significant moderators are presented here. Complete results can be found on the Supplementary material at https://osf.io/7ub9d/.

Table 2 shows no result for Harm/care and Loyalty/betrayal. This means that no significant moderator was found, and therefore heterogeneity for Harm/care and Loyalty/betrayal remains unexplained.

Analysis found that MFQ plays a significant role as a moderator and explains a significant amount of inter-study variance for Fairness/cheating (17.3%), Authority/subversion (14.7%) and Purity/degradation (57.2%) pooled ES. For samples using any version of the MFQ, results show no differences between urban and rural contexts for Fairness/cheating, whereas significant and negative differences are shown for Authority/subversion and Purity/degradation. Moreover, no significant heterogeneity has been found among samples using any version of the MFQ. This means that, when any version of the MFQ is used, people in rural contexts show higher concerns for Authority/subversion and Purity/degradation, than people in urban contexts, and this result does not depend on any moderator. When a scale other than a version of the MFQ is utilized, results show significant differences

for Fairness/cheating, no significant differences for Authority/subversion and Purity/degradation, and a very high heterogeneity across samples that cannot be explained with any of the variables selected as possible moderators.

Lastly, the USA also appears as a significant moderator for Authority/subversion ($R^2$=11.9). For samples with a sample located in the USA, results show a significant negative difference between urban and rural contexts for Authority/subversion and no significant heterogeneity. This means that when a sample located in the USA is used, people in rural contexts show higher concerns for Authority/subversion than people in urban contexts, and this result does not depend on any moderator. When a sample located outside the USA is utilized, results show no significant differences for Authority/subversion and a very high heterogeneity across samples that cannot be explained with any of the variables selected as possible moderators.

# Discussion

The purpose of this study was twofold: first, to investigate to what extent there are significative differences in moral foundations between rural and urban contexts; and second, if those differences exist, to see at what extent they reflect the same differences as the liberal-conservative divide. Results show that differences may exist, but mostly when moral foundation concerns are measured with a version of the MFQ, and those differences do not reflect the same differences as the liberal-conservative divide.

## Differences in moral foundations between rural and urban contexts are non-significant overall

Despite the fact that greater individualism could be expected in a big city and greater collectivism in the countryside (Watkins & Regmi, 1996; Georgas, 1989), this does not seem to be the case regarding moral foundations. The supposedly rural-urban divide does not appear to act like a main effect on moral foundations in Table 1. Only a significant pooled ES for Fairness/cheating appears, but this effect is very small (d = -.074), as it represents approximately 0.5% of Fairness/cheating variance. Moreover, Orwin's fail-safe number for Fairness/cheating is very small (n = 11). This means that the difference that has been calculated here will probably be become non-significant with the inclusion of future studies.

## Differences between rural and urban contexts appear almost as predicted when moral foundations concerns are measured with a version of the MFQ

Differences between rural and urban contexts were expected to exist but as dependent of other variables, since heterogeneity was found to be significant for all five moral foundations, and also quite high for Fairness/cheating, Loyalty/betrayal, Authority/subversion and Purity/degradation. However, analyses found that the majority of variables selected as possible moderators: gender, age, Gini index, country population density and country GDP, explain no significant amount of moral pooled ES' heterogeneity. Furthermore, no moderating variable was found for Harm/care and Loyalty/betrayal. Only MFQ was found to be a moderator for Fairness/cheating, Authority/subversion and Purity/degradation, whereas USA was found to be a moderator for Authority/subversion. A meta-regression model was fit with both USA and MFQ as possible predictor variables, but none of them were included in the final model as a significant predictor. This result made it impossible to choose MFQ over USA (or vice versa) as a better moderator from a technical point of view. However, MFQ shows a higher $R^2$ than USA for Authority/subversion, and also appears as the only significant moderator for Fairness/cheating and Purity/degradation. Therefore, I believe that MFQ can give a fairly parsimonious explanation for how the pooled ES vary across the samples.

As Table 2 shows, results are quite different when a version of the MFQ is utilized to measure the moral foundations, and when non-version of the MFQ is utilized.

When a version of the MFQ is utilized, differences between rural and urban contexts appear as predicted for Authority/subversion and Purity/degradation. People from rural contexts show higher concerns for communitarian foundations (Authority/subversion and Purity/degradation), but concerns for a more

individualist foundation (Fairness/cheating) are not significantly different. Furthermore, when a version of the MFQ is utilized, heterogeneity becomes non-significant in the three moral foundations. Overall, when a version of the MFQ is utilized, people in rural contexts appear to encompass greater concerns for Authority/subversion and Purity/degradation, than people from urban contexts, whereas no significant differences between rural and urban contexts appear for the individualizing foundations (Harm/care and Fairness/cheating) and neither for Loyalty/foundation. This lack of significance regarding differences in Loyalty/betrayal foundation, regardless of the effect of any possible moderating variable, was not expected. The results regarding Authority/subversion and Purity/degradation, however, are in line with the evidence we showed at the beginning of this manuscript: the rural world appeared as riskier, which would demand higher adherence to social rules, and also appeared more oriented towards community life and some more traditional values, such as the restriction of certain sexual behaviors. Although the moral differences between the rural and the urban are not large, the absence of significant heterogeneity in most of the differences points to a consistent pattern of moral differences between the country and the big city.

## The use of non-version of the MFQ for measuring moral foundations differences between rural and urban contexts may not be advised

When a non-version of the MFQ is utilized, people from urban contexts appear to have significantly higher concerns for Purity/degradation, significantly less concerns for Fairness/cheating, and non-significant different concerns for Authority/subversion, than people from rural contexts. These results are quite difficult to interpret, as there is no theoretical justification for the people from urban contexts to show a more communitarian moral matrix than people from rural contexts, at least regarding Fairness/cheating and Purity/degradation. This puzzling result, coupled with the fact that the use of a non-version of the MFQ is associated with high heterogeneity in every case, may indicate that the use of a non-version of the MFQ may lead to non-accurate moral foundations measures and, therefore, non-accurate results overall. Contrary to the items included in the MFQ, using items from other scales not psychometrically validated by the MFT research group, or directly chosen ad-hoc by the researcher, may not correctly reflect the theoretical content of the moral foundations.

For example, the five items utilized by Welsch, (2019) are: “(it is) Important to help people and care for others’ well-being” for Harm/care, “(it is) Important that people are treated equally and have equal opportunities” for Fairness/cheating, “(it is) Important to be loyal to friends and devote to people close” for Loyalty/betrayal, “(it is) Important to do what is told and follow rules” for Authority/subversion, and “(it is) Important to follow traditions and customs” for Purity/degradation foundation. When comparing these items with the original 30-item Moral Foundations Questionnaire (MFQ30) that can be found in https://moralfoundations.org, it is clear that, whereas the item Welsch (2019) chose for Harm/care would be well-suited, the items for Authority/subversion and Purity/degradation may not suit so well. Authority/subversion is not just about following rules but following the role the person has as a member of a specific group, and Purity/degradation is not about following traditions in general but following certain religious and sexual norms (Graham et al., 2013). In Annex 2, five forest plots, with samples grouped into MFQ-based and non-MFQ based categories, for each of the five moral foundations, show how non-MFQ samples’ pooled ES appear to be situated randomly both in negative and positive values, whereas MFQ-based samples show a much more uniform distribution.

Moreover, utilizing only 5 ad-hoc items, instead of the original MFQ30, or any other version of it, may have also introduced issues due to insufficient representation of each moral foundation. This lack of items may not sufficiently anchor each foundation within a reliable statistical space.

Therefore, results indicate that when measuring moral foundations differences between rural and urban contexts, the use of MFQ-based scales and/or items should probably be preferable.

## Why Binding Foundations differences are small, even with the MFQ

The present study found that when a version of the MFQ is utilized, significant moral foundation differences in

Binding Foundations exist between rural and urban contexts, but only regarding Authority/subversion and Purity/degradation. Furthermore, pooled ES are small, regarding Lovakov and Agadullina (2021) interpretations, ranging from $d_+$ = -.127 for Authority/subversion, and $d_+$ = -.177 for Purity/degradation. No significant differences were found for Loyalty/betrayal. Why are group moral differences, especially regarding LB, smaller than expected, even when using a version of the MFQ?

First, it is very important to note, when interpreting the results displayed here, that the differences refer only to two types of human habitat: the rural world and the urban world. Logically, we are not here discussing the relationship between morality and another type of urban reality, such as a suburb, or a relatively populated town. There are a large number of urban realities with their own characteristics for which we have not presented any answer regarding what their moral characteristics are, or if these characteristics are more similar to a large metropolis, or to a small town, for example.

Second, a clear cultural bias has already been found regarding research made within the MFT framework. Although the MFT was born as a cultural and anthropological-based theory, the development of the MFT, and consequentially the development of the MFQ, have been quite associated with the main hypothesis of the MFT, regarding moral differences between liberals and conservatives, specifically in the USA. Therefore, the MFT and the MFQ were developed to measure USA-based morals and specifically measure moral differences between liberals and conservatives in the USA. This theoretical bias may have affected the generalizability of some of the items of the scale, and therefore, it may have caused some validity problems when testing the MFT on other variables different than ideology (possibly like urbanization), or other countries different than the USA, whose connections to morality may not be correctly addressed by the MFQ items. For example, the five-factor model of the MFT itself has shown much lower validity than expected for non-western countries populations (Iurino & Saucier, 2020) and also for populations such as blacks or religious people (Davis et al., 2017; Davis et al. 2016). Finally, Zakharin and Bates (2024) have recently shown that, in order to optimize the MFQ fit, Loyalty/betrayal should be split into Loyalty and Country, and Purity/degradation should be split into Purity and Sanctity.

# Conclusions

The present study found that when a version of the MFQ is utilized, moral foundation differences in Binding Foundations exist between rural and urban contexts regarding Authority/subversion and Purity/degradation. However, moral differences between rural and urban environments have not been detected overall. It would be necessary to address the generalizability issues that the MFQ may have regarding the measurement of moral foundations in specific social environments, such as non-Western countries, that may not present similar moral concerns and moral divisions than those present in the USA. A good example of this necessary effort could be the work done by Sychev et al. (2018), who have adapted some MFT items to better address what the specific meaning of terms like Loyalty" or "Purity" means within the Russian cultural and social contexts. Also, the possible split of moral foundations proposed by Zakharin & Bates (2024), would be interesting to consider in order to test moral differences between rural and urban environments. Maybe rural and urban moral differences would be better addressed by splitting Loyalty and Purity since both foundations could be representative of both the rural environment and the urban environment, but with a different emphasis: loyalty for the country and religious-related purity for rural environments and loyalty for the collective (or clan) and Purity for environmental-issues (like climate change), for urban environments.

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